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Claims

[c1] 1.A method for supplying power to a load using multiple power sources, comprising:
providing power comprising a first value of a parameter from a first power source to the load;
monitoring the first value;
providing power comprising a second value of the parameter from a second power source to the load, wherein the second value comprises substantially the first value when the first value is within a range of values for the parameter and is within the range when the first value is outside the range;
disconnecting the first power source from the load when the first value is not within the range; and
reconnecting the first power source to the load when the first value is within the range and while the second power source continues to provide power to the load.

[c2] 2.The method of Claim 1, wherein the parameter comprises frequency.

[c3] 3.The method of Claim 2, wherein the parameter comprises frequency and the first value comprises substantially 50 Hertz.

[c4] 4.The method of Claim 2, wherein the parameter comprises frequency and the first value comprises substantially 60 Hertz.

[c5] 5.The method of Claim 1, wherein the parameter is voltage.

[c6] 6.The method of Claim 1, wherein the parameter comprises phase.

[c7] 7.The method of Claim 1, further comprising storing the first value of the parameter.

[c8] 8.The method of Claim 7, wherein the step of storing the first value comprises storing the first value that comprises a last monitored first value that is within the range for the parameter.

[c9] 9.The method of Claim 8, wherein providing power comprising a second value of the parameter from a second power source to the load, wherein the second value is within the range when the first value is outside the range comprises providing power comprising a second value of the parameter from a second power source to the load, wherein the second value comprises substantially the last monitored first value.

[c10] 10.The method of Claim 9, further comprising the step

of drifting the second value of the parameter to a fundamental value.

[c11] 11.The method of Claim 1, wherein providing power from a first power source to the load comprises providing power from a grid power source.

[c12] 12.The method of Claim 1, wherein providing power from a first power source to the load comprises providing power from one or more generators.

[c13] 13.The method of Claim 1, wherein the step of providing power from a second power source to the load comprises providing power from one or more generators.

[c14] 14.The method of Claim 13, wherein the step of providing power from one or more generators comprises providing power from one or more microturbines.

[c15] 15.The method of Claim 1, wherein the step of providing power from a second power source to the load comprises providing power from a grid power source.

[c16] 16.The method of Claim 1, further comprising the step of providing the range of values.

[c17] 17.The method of Claim 16, wherein the step of providing the range of values comprises providing a low limit value and a high limit value wherein the low limit value

corresponds to one of two ends of the range and the high limit value corresponds to the other end of the range.

[c18] 18.The method of Claim 1, wherein reconnecting the first power source to the load comprises drifting the second value of the parameter of the second power source towards the first value of the first power source when the first value becomes within the range while the second power source continues to provide power to the load and reconnecting the first power source to the load when the first value and the second value are substantially the same.

[c19] 19.A method of supplying power to a load using a plurality of generators, comprising:
connecting the plurality of generators to the load;
providing a synchronization frequency from a controller which is external to the plurality of generators;
providing power from each of the plurality of generators to the load wherein the power provided by each of the generators comprises a frequency which is substantially the synchronization frequency.

[c20] 20.The method of Claim 19, wherein the power provided by each of the plurality of generators comprises a frequency of substantially 50 Hertz.

[c21] 21.The method of Claim 19, wherein the power provided by each of the plurality of generators comprises a frequency of substantially 60 Hertz.

[c22] 22.A power generating system, comprising:
a generator including an inverter capable of producing an output waveform having a frequency to power a load; and
a controller connected to the generator wherein the controller is capable of providing the frequency for producing the output waveform and is operative to drift the frequency to substantially match a frequency from a second power source.

[c23] 23.A power distribution system, comprising:
a load;
a grid power source connected to the load which provides power having a grid frequency;
a generator connected to the load which provides power having a generator frequency;
a controller connected to the generator wherein the controller is operative to provide the generator frequency to the generator and is operative to drift the generator frequency to the grid frequency; and
a sensor connected to the grid power source and to the controller that measures a grid operating condition.

[c24] 24.The system of Claim 23, wherein the grid operating condition comprises the grid frequency.

[c25] 25.The system of Claim 23, wherein the grid operating condition comprises a voltage of the grid power source.

[c26] 26.The system of Claim 25, wherein the controller is further operative to disconnect the grid power source from the load if the voltage of the grid power source is outside the range of values.

[c27] 27.The system of Claim 24, wherein the controller comprises:
a mode switch logic device that is operative to disconnect and reconnect a power source based on input from range detectors;
a frequency range detector that is connected to the mode switch logic device and which determines if the grid frequency is within the range; and
a frequency adjust loop that is operative to drift the generator frequency to the grid frequency.

[c28] 28.The system of Claim 24, wherein the controller comprises a default frequency generator which provides the generator with a default frequency to provide power when disconnected from the grid power source.

[c29] 29.The system of Claim 24, wherein the controller comprises a grid period stretcher that attempts to alter the generator frequency to detect islanding conditions.

[c30] 30.The system of Claim 25, wherein the controller comprises a voltage range detector that is connected to the mode switch logic device and which determines if the voltage is outside the range.

[c31] 31.A method for detecting whether a potential power source is still providing power to a load, comprising:
providing power having a first frequency from a first power source to the load;
providing power having a second frequency from a second power source to the load wherein the second frequency is substantially the same as the first frequency;
attempting to drift the second frequency of the power from the second power source away from the first frequency of the power from the first power source;
monitoring the second frequency of the power provided by the second power source; and
evaluating whether the first power source is providing power to the load.

[c32] 32.The method of Claim 31, wherein providing power from a first power source comprises providing power from a utility grid.

[c33] 33.The method of Claim 31, wherein providing power from a second power source comprises providing power from one or more generators.

[c34] 34.The method of Claim 31 wherein attempting to drift the second frequency of the second power source away from the first frequency comprises attempting to lower the second frequency.

[c35] 35.The method of Claim 31, wherein attempting to drift the second frequency of the second power source away from the first frequency comprises attempting to raise the second frequency.

[c36] 36.The method of Claim 31, wherein evaluating whether the first power source is still providing power to the load comprises determining that the first power source is no longer providing power if the second frequency drifts away from the first frequency.